



ORGANISED CRIME AND DRUGS IN SPORT

New Generation Performance and Image Enhancing Drugs and Organised Criminal Involvement in their use in Professional Sport



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OVERVIEW

In 2011, the Australian Crime Commission (ACC) highlighted threats to the integrity of professional sport and concluded that there was potential for organised crime to infiltrate sport in Australia, as has occurred overseas.

Data from the ACC's 2010–11 Illicit Drug Data Report indicated that the market for Performance and Image Enhancing Drugs (PIEDs) has expanded, with record numbers of seizures, detections and arrests and increasing reports by users that they were injecting them. The ACC also received information from the Australian Sports Anti-Doping Authority (ASADA), as part of the ACC's routine monitoring of all illicit drug markets, which suggested a potential threat to a number of sports from the use of new generation PIEDs.

In early 2012, the ACC, with the assistance of ASADA¹, began a project to consider the extent of use of PIEDs by professional athletes, the size of this market and the extent of organised criminal involvement. This project focused particularly on a new form of PIEDs, known collectively as peptides and hormones. These substances may provide effects similar to anabolic steroids and are considered by users to be next generation PIEDs. Some of these substances are perceived by athletes to be undetectable, making them attractive to those seeking to gain an unfair advantage.

This report provides a summary of findings from this project. In particular, the ACC has now identified use of these substances, which are prohibited by the World Anti-Doping Agency (WADA), by professional athletes in a number of sports in Australia. Widespread use has been identified or is suspected in a number of professional sporting codes.

In detailing the nature and extent of this threat to the professional sporting industry and the Australian Community, this report provides an important opportunity for Government, regulatory bodies and the sporting industry to address these issues head on.

¹ The ACC has collaborated with ASADA throughout this project and references to the ACC in this report should be understood to imply and reflect the outcomes of this collaboration. As the appropriate regulatory agency, ASADA will conduct its own investigation of matters raised by this project.

AIM AND SCOPE

The project, code named Project Aperio, was a 12-month ACC investigation, supported by ASADA and the Therapeutic Goods Administration (TGA), which examined the following four key issues:

- new generation PIEDs, that were previously considered to be only used by elite athletes and are now widely available
- the involvement of organised criminal identities and groups in the distribution of new generation PIEDs
- the use of WADA prohibited substances by professional athletes in Australia
- current threats to the integrity of professional sport in Australia.

Based on intelligence provided to the ACC, Project Aperio primarily considered two major sporting codes in Australia and collected incidental intelligence relating to other sporting codes.

This report does not provide a comprehensive summary of all relevant activity of concern in all sports, or all sporting clubs and franchises in Australia. Rather it represents a snapshot of the activity, derived from the intelligence which formed the original basis of the inquiries and the need for the ACC to focus on the role of organised crime in the PIEDs market. It is likely, given the level of demand for PIEDs and the diverse sources of supply, that the use of WADA prohibited substances is more widespread than identified in this report.

LIMITATIONS ON DISCLOSURE OF FINDINGS

Legal provisions prevent the ACC from publicly disclosing detailed information about the nature of the matters contained in this report. This includes the disclosure of information specifically referencing players, clubs and any information that could identify other individuals involved. Particular sporting bodies have received classified briefings on matters relevant to them.

As such, the report focuses on describing the broad nature of the activities, threats and vulnerabilities and includes intelligence judgements about the likely future trajectory of these issues.

KEY FINDINGS

NATURE OF THE THREAT

Despite being prohibited substances in professional sport, peptides and hormones are being used by professional athletes in Australia, facilitated by sports scientists, high-performance coaches and sports staff. Widespread use of these substances has been identified, or is suspected by the ACC, in a number of professional sporting codes in Australia. In addition, the level of use of illicit drugs within some sporting codes is considered to be significantly higher than is recorded in official statistics.

The ACC has also identified that organised crime identities and groups are involved in the domestic distribution of PIEDs, which includes peptides and hormones. If left unchecked, it is likely that organised criminals will increase their presence in the distribution of peptides and hormones in Australia.

The ACC has identified significant integrity concerns within professional sports in Australia related to the use of prohibited substances by athletes and increasing associations of concern between professional athletes and criminal identities.

Further key findings, summarised into relevant topics are outlined below.

THE PIEDs MARKET

The PIEDs market in Australia is large and diverse, with a wide range of substances being used by a broad cross-section of the community.

PIEDs previously considered to only be available to elite athletes and used in sophisticated sports doping programs due to the expense and complexity of their administration, are now widely available. A highly profitable and organised market has been established around the sourcing and supply of new generation PIEDs.

The growth hormone releasing peptide (herein referred to as 'peptides'), hormone and anabolic steroid markets are assessed by the ACC to be one and the same, with individuals trafficking anabolic steroids also distributing peptides and hormones.

THE ROLE OF ORGANISED CRIME

Organised criminal identities and groups are active in the trafficking of PIEDs that are being used by elite athletes in Australia. Organised crime groups are taking advantage of the current legislative and regulatory situation whereby persons and entities who supply certain substances to athletes which are prohibited under the WADA Code do not commit a crime in Australian jurisdictions. However, athletes who use the substances face substantial sporting bans. This is a significant legislative and regulatory vulnerability.

Professional sport in Australia is highly vulnerable to organised criminal infiltration through legitimate business relationships with sports franchises and other associations. This is facilitated by a lack of appropriate levels of due diligence by sporting clubs and sports governing bodies when entering into business arrangements.

There is also increasing evidence of personal relationships of concern between professional athletes and organised criminal identities and groups.

USE BY PROFESSIONAL ATHLETES



The ACC has identified widespread use of peptides and hormones by professional athletes in Australia. Given that many of these substances are prohibited for use by athletes by WADA, athletes who use these substances have potentially committed anti-doping rule violations.

While intelligence confirms the use of peptides in major sporting codes, it further suggests that individuals in a range of other codes may also be using peptides.

Multiple players across some sporting codes and specific clubs within those codes are suspected of currently using or having previously used peptides, which could constitute an anti-doping rule violation. The level of suspected use of peptides varies between some sporting codes, however officials from a club have been identified as administering, via injections and intravenous drips, a variety of substances, possibly including peptides. Moreover, the substances were administered at levels which were possibly in breach of WADA anti-doping rules.

The use of peptides and hormones is linked to a culture in some professional sports in Australia of administering untested and experimental substances to athletes in the hope they will provide an advantage in the highly competitive world of professional sport. In some instances, the substances are not yet approved for human use.

In addition to elite athletes using peptides and hormones, these substances are also being used by sub-elite athletes competing at various levels of competition, for example at the state and club level.

Illicit drug use by professional athletes is more prevalent than is reflected in official sports drug testing program statistics, and there is evidence that some professional athletes are exploiting loopholes in illicit drug testing programs.

THE ROLE OF SPORTS SCIENTISTS, COACHES AND OTHER FACILITATORS

Some coaches, sports scientists and support staff of elite athletes have orchestrated and/or condoned the use of prohibited substances and/or methods of administration.

Sports scientists are now influential in professional sport in Australia, with some of these individuals prepared to administer substances to elite athletes which are untested or not yet approved for human use.

In many Australian sporting codes, sports scientists have gained increasing influence over decision making within the clubs. Some sports scientists and doctors are experimenting on professional sportspersons in an effort to determine if particular substances can improve performance without being detected.

Complicit medical practitioners are a key conduit through which peptides and hormones are being supplied to athletes and other individuals on prescription. In some cases, medical practitioners who are prescribing peptides, hormones and other PIEDs are engaging in lax, fraudulent and unethical prescribing practices, such as prescribing controlled drugs in false names.

Some anti-ageing clinics have been identified as a key source of supply of pharmaceutical grade WADA prohibited PIEDs to athletes, in some cases without prescription.

THE IMPORTANCE OF SPORT IN AUSTRALIA

Internationally and domestically, sport has become a highly profitable global enterprise. Based on the latest available Australian Bureau of Statistics data,² in 2006 the total annual income generated by the sport and recreation industry in Australia was estimated



at A\$8.82 billion, a figure which will have grown substantially since then. Apart from the direct contribution of sport to the Australian economy, there is intangible value from the success of Australian teams and athletes on the international stage and the ability to showcase Australia on the international stage when it hosts major events.

The concept of fair play is a key foundation for amateur and professional sport in Australia. *The Essence of*

Australian Sport,³ a document produced last year by the Australian Sports Commission (ASC) in consultation with the sports industry, provides a statement on what sport in Australia stands for—its core principles and values.

This document notes: “Australians are proud of their sporting ability and reputation as a nation of good sports, and our society expects high standards of behaviour from all people involved in sport.”⁴

The ACC and ASADA have identified significant issues in professional and sub-elite sport in Australia which undermine the principles of fair play as a direct consequence of the use of PIEDs.

The importance of fairness is identified as one of the key principles in *The Essence of Australian Sport*. The document states that players of sport at all levels should strive to uphold the principles of fairness and operate in the spirit of the rules, never taking an unfair advantage, and making informed and honourable decisions at all times.

It goes on to state: “...it is vital that the integrity of sport is maintained. The main responsibility for this lies with decision makers at every level of sport, who should ensure

² Australian Bureau of Statistics (ABS) 2006, Sport and physical recreation services, Australia-2004–05, ABS, Canberra.

³ The Australian Sports Commission (ASC) 2012, *The essence of Australian sport*, Canberra, n.d., viewed 20 November 2012, <http://www.ausport.gov.au/__data/assets/pdf_file/0011/312869/A4_brochure_7_05-V5.pdf>.

⁴ *ibid.*, p.2.

that all policies, programs and services are based on the principles of fairness, respect, responsibility and safety.”⁵

Apart from the potential impact on spectators and their loss of faith in sport arising from integrity issues around the use of prohibited substances, the increasing link between sports and wagering markets means the issues identified by the ACC and ASADA also have major implications for the integrity of sports betting markets. Individuals and teams engaged in the use of prohibited substances have an unfair advantage, which can be exploited by persons with inside information.

While there is a long history of betting on sports, the market has expanded significantly in recent years with growth of up to 13 per cent annually. Betting on racing⁶ remains the largest betting market in Australia, increasing 69 per cent between 2000–01 and 2010–11. Wagering on other sports increased by 278 per cent over the same period.⁷

5 *ibid.*, p.2.

6 Racing includes thoroughbred horse racing, and harness and greyhound racing.

7 In 2000–01, of the estimated A\$12.8 billion wagered on racing and other sports in Australia, A\$880 million was wagered on sports other than racing. In 2010–11, A\$23.5 billion was wagered on racing and sports in Australia, with A\$3.3 billion being wagered on sports other than racing; Australian Racing Board Limited 2011, *Australian Racing Fact Book; A guide to the Racing Industry in Australia*, Australian Racing Board, Sydney.

PERFORMANCE AND IMAGE ENHANCING SUBSTANCES

The principal substances identified through Project Aperio as being used were:

- growth hormone releasing peptides (CJC-1295, GHRP-2, GHRP-6 and Hexarelin)
- growth hormone variants (AOD-9604)
- selective androgen receptor modulators (SARMs)
- insulin like growth factor (IGF-1) and mechano growth factor (MGF).

For the purposes of this report, these substances will be collectively referred to as peptides and hormones. A summary of the legal status and status of these substances in professional sport is detailed in Appendix Two.

The Australian PIEDs market has expanded rapidly in recent years. This is evidenced by:

- increased border seizures, with the number of PIEDs detected at the Australian border rising from 2695 in 2009–10 to 5561 in 2010–11, a 106 per cent increase, and the highest recorded number of PIEDs detections at the border in the last decade⁸
- an increase of 255 per cent between 2009–10 and 2010–11 in the number of hormones detected at the Australian border by the Australian Customs and Border Protection Service
- the highest number on record of national steroid seizures and arrests in 2010–11 by Australian law enforcement agencies⁹
- an increasing number of individuals reporting the injection of PIEDs
- more than half of the males who were new to injecting in 2011 were reportedly injecting PIEDs.¹⁰

While anabolic steroids remain the most widely recognised PIEDs, an array of drugs that were originally developed for the treatment of medical and hormonal disorders by manipulating the body's hormonal system are now also being used as PIEDs.

⁸ Australian Crime Commission (ACC) 2012, *Australian Illicit Drug Report 2010–11*, ACC, Canberra.

⁹ *ibid.*

¹⁰ University of New South Wales (UNSW) 2012, *Australian NSP Survey: National Data Report 2007–2011*, UNSW, Sydney.

GROWTH HORMONE RELEASING PEPTIDES

In recent years, peptides have become increasingly popular among professional and amateur athletes, bodybuilders, and as a 'fountain of youth' within the anti-ageing fraternity.

Growth hormone releasing peptides stimulate release of an increased level of human growth hormone (hGH), which has a history of misuse by athletes and may play an important role in muscle and bone growth.

While peptides can be used on their own to promote muscle growth, these substances are also used in combination with anabolic steroids to maintain muscle gains.

Peptides have become popular with elite athletes given the ability of these substances to stimulate hGH production, resulting in possible anabolic effects. Anecdotal reports suggest peptides assist in rehabilitating soft tissue injuries. However, both the rehabilitative properties and broader benefits of peptides to athletes (who typically have higher levels of hGH) are yet to be scientifically proven.

Peptides are also marketed as an anti-ageing medicine given their ability to increase hGH levels and compensate for the natural decline in hGH associated with ageing.¹¹

From an anti-doping perspective, the ability to detect peptide use is complex, as these substances are rapidly metabolised.

Peptides are classified as a Schedule 2 (S2) prohibited substance on the WADA Prohibited List and are therefore prohibited for use by professional athletes both in and out of competition. Peptides have been a WADA prohibited substance since at least 2008.

As noted previously, the principal peptides identified by the ACC and ASADA as being misused in both professional sports and the broader population are:

- CJC-1295
- GHRP-6
- Hexarelin.

Peptides are sold either as a transdermal cream or in a solution for injection as per the examples in Figure 1. As shown in Figure 1, the solution for injection clearly states on the label that these substances are 'For Research Purposes Only'. A comprehensive overview of the various peptides currently being used in Australia is provided in Appendix Two and Appendix Three.

¹¹ hGH levels peak during childhood and adolescence and then consistently decrease through adulthood.

FIGURE 1: GHRP-6 transdermal cream (on left) and GHRP-6 solution for injection (on right)



Most peptides are listed under Schedule 7A Item 3 of the Customs (Prohibited Imports) Regulations 1956. Further, under Regulation 5 of these Regulations, Schedule 7A substances are classified as prohibited imports unless the importer has a permit to import issued by the TGA.

GROWTH HORMONE VARIANTS

AOD-9604 is a variant of growth hormone which has fat burning properties and may be used by athletes to increase power to weight ratios by better utilisation of fat stores.

AOD-9604 is about to enter phase three clinical trials.¹² During phase two clinical trials it was also found to have an anabolic effect on cartilage tissue and may promote cartilage creation and repair and have a capacity to enhance muscle formation.¹³

AOD-9604 is not currently a WADA prohibited substance.

SELECTIVE ANDROGEN RECEPTOR MODULATORS

Unlike testosterone which has anabolic and androgenic¹⁴ effects, Selective Androgen Receptor Modulators (SARMs) appear to only act on anabolic receptors that cause tissue (bone and muscle) growth. This causes a low tendency for undesirable androgenic side effects which include the development of male characteristics in females and baldness and breast tissue development in males (gynecomastia).

¹² Phase III clinical trials involve greater numbers of patients and are undertaken for the purpose of determining whether the medicine confers clinical benefit in the disease/s for which effectiveness was demonstrated in Phase II clinical trials. They also determine the nature and likelihood of any side effects. Phase III clinical trials are undertaken if the Phase II clinical trials indicate the medicine has potential benefit that outweighs the hazards.

¹³ Calzada ASX announcement (Calzada) 2012, *AOD9604 Shows Positive Results in Cartilage and Muscle Repair Models*, viewed 24 January 2013, <<http://calzada.com.au/wp-content/uploads/2012/06/132F042F2012103A223A05PM.pdf>>.

¹⁴ Androgenic side effects of steroid use include acne, musculoskeletal injuries, cardiovascular disease, impaired liver function and gynecomastia.

The use of SARMs by elite athletes is well documented, with these substances believed to have been widely used since at least 2008. With the availability of suitable standards, some SARMs can be detected. SARMs are reported to be used in combination with other PIEDs, including hGH. SARMs are classified as a Schedule 1 (S1)-anabolic agent on the WADA Prohibited List and are a prohibited substance for elite athletes both in and out of competition.

The scheduling of SARMs was recently considered by the TGA's Advisory Committee on Medicines and Scheduling, which determined that SARMs will be classified as a Schedule 4 medicine and included in Appendix D in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) (The Poisons Standard). This will make it illegal to possess SARMs without legal authority (through prescription). This change in scheduling will take effect on 1 May 2013.



INSULIN-LIKE GROWTH FACTORS (IGF-1)

IGF-1 is a hormone secreted by the liver and is one of the primary hormones necessary for cell growth in the body.

Athletes use IGF-1 for its anabolic effect in muscle and to facilitate the development of cartilage and bone. In many cases, athletes will use hGH and IGF-1 in small doses to reduce the chances of returning a positive anti-doping sample.

MECHANO GROWTH FACTOR (MGF)

MGF is derived from IGF-1 and assists tissue repair and adaptation. It is expressed as a pulse following muscle damage (such as after weight training) and is believed to be essential for repair and growth of new cells. MGF is used by bodybuilders due to its role in muscle repair following exercise.

Under the Poisons Standard, IGF-1 possesses the same status as anabolic steroids and is a Schedule 4 medicine, with the additional control that possession without authority is illegal (for example possession other than in accordance with a legal prescription). IGF-1 and MGF are S2 prohibited substances on the WADA Prohibited List and are therefore prohibited for use by professional athletes both in and out of competition.

OTHER SUBSTANCES

The ACC has identified the use of a range of other substances by elite athletes, bodybuilders and other users, some of which are prescription only medicines. A summary of these substances is provided below:

Substance	Effect	Regulatory Status
Ipamorelin	A peptide that provides a possible anabolic effect	<ul style="list-style-type: none"> • Customs Prohibited Import • S2 of WADA prohibited substances
Sermorelin	A peptide that provides a possible anabolic effect	<ul style="list-style-type: none"> • Customs Prohibited Import • S2 of WADA prohibited substances
Melanotan	Tanning agent and aphrodisiac	<ul style="list-style-type: none"> • Schedule 4 in the Poisons Standard
PT-141	Tanning agent and aphrodisiac	<ul style="list-style-type: none"> • Schedule 4 in the Poisons Standard
Follistatin	Promotes muscle growth	<ul style="list-style-type: none"> • Schedule 4 in the Poisons Standard. Additionally, possession without legal authority is illegal • S4 (hormone and metabolic modulators) of WADA prohibited substances
Thymosin (TB-500)	Injury recovery	<ul style="list-style-type: none"> • Not regulated • S2 of WADA prohibited substances

PEPTIDE AND HORMONE CONSUMERS

A diverse group of individuals has been identified as users of peptides and hormones. However, users can be categorised into three main groups:

- elite and sub-elite athletes
- bodybuilders
- anti-ageing clinic clients.

The ACC has also identified the administration of peptides and hormones to thoroughbred racehorses, which is a breach of the Rules of Racing.

ELITE ATHLETES¹⁵

Widespread use of peptides has been identified, or is suspected by the ACC, in a number of professional sporting codes in Australia. Although the use of peptides appears to be more widespread in some major codes, individuals from a number of other sports are also suspected of using peptides.

Multiple players (in one code) from a number of clubs are suspected of currently using or having previously used peptides, which could constitute an anti-doping rule violation.¹⁶ Some players have also been identified as sourcing peptides for personal use. An instance of team-based doping, orchestrated by some club officials and coaching staff, has also been identified.

Apart from the peptide's anabolic effects, it has been found that injured elite athletes, particularly players from one sporting code, have been using peptides to assist in rehabilitating soft tissue injuries.

While the level of suspected use of peptides varies between sporting codes, officials from one club have been identified as administering, via injections and intravenous drips, a variety of substances, possibly including peptides. Moreover, the substances were administered at levels which were possibly in breach of WADA anti-doping rules. This activity was orchestrated by some club officials and the club's high performance unit.

While intelligence confirms the use of peptides in major sporting codes, it further suggests that individuals in a range of other codes may also be using peptides.

¹⁵ For the purposes of this report, elite athletes are deemed to be those athletes who are competing in a recognised major competition in Australia or who are representing Australia or who are receiving payment and are considered to be professional athletes.

¹⁶ The issue of whether particular athletes have committed an anti-doping rule violation will be determined by the formal process which governs ASADA investigations of this type.

SUB-ELITE ATHLETES

Apart from the use of peptides by elite athletes, sub-elite athletes have also been identified as using peptides and hormones. Sub-elite athletes are considered a high-risk group for doping due to:

- the highly competitive environment in attaining a position in elite sport
- the ability to make significant gains in strength and power through the use of PIEDs.

Peptides and hormones have been identified as being used at the sub-elite level in a number of sporting codes. Given the ease with which the various peptides and hormones can be obtained, any motivated sub-elite athlete is capable of acquiring and using these substances as illustrated in Case Study 1.

CASE STUDY 1

PROHIBITED SUBSTANCE USE BY SUB-ELITE ATHLETES

On 14 October 2010, Customs and Border Protection intercepted a package from Canada which contained ten, five milligram vials of white powder labelled GHRP-6. Subsequent inquiries by ASADA identified the addressee as a rugby union player in a state club rugby competition.

On 28 November 2010, Customs and Border Protection intercepted a package from Canada addressed to another individual from the same team. This package contained five vials of what was believed to be GHRP-6.

Although it was not able to be established in the investigation, ASADA assessed it 'as possible' that the two individuals who had imported these substances were complicit in the importation of GHRP-6 from Canada, and that other team members of these individuals were using GHRP-6.

After an extensive investigation by ASADA, the matter was referred to the Australian Rugby Union as a potential anti-doping rule violation. The ARU subsequently imposed a four-year ban on one individual for the possession and attempted trafficking of GHRP-6, and the other individual received a two-year ban for possession of GHRP-6.

As demonstrated by this example, a rigorous and lengthy investigation is undertaken in the administration of an anti-doping rule violation.

The fact that PIEDs use is occurring at the sub-elite level—and it is from these ranks that elite athletes are selected—means there is a threat to the integrity of professional sport in Australia.

BODYBUILDERS

While the use of anabolic steroids by bodybuilders is well established, peptides and hormones have become increasingly popular amongst bodybuilders. Given the historical and widespread use of prohibited substances in bodybuilding, bodybuilders are often at the cutting edge of doping trends.

The peptides, IGF-1, MGF and SARMs have gained a reputation amongst the bodybuilding community as being highly effective anabolic agents and are deemed by bodybuilders to have a number of advantages over steroids. This is because users do not experience the adverse and well recognised effects of prolonged anabolic steroid use, such as liver damage and disruption of hormonal production.

Similar to online illicit drug forums, the use of peptides and hormones is the subject of extensive discussion in online bodybuilding forums. Users of peptides and hormones use these online forums to share information on the effects, dosage and administration of these substances. Individuals are also discussing how to combine peptides and hormones with anabolic steroids in 'stacks'¹⁷ and cycles in order to increase the development of lean muscle, while minimising the side effects associated with use of these substances.

Case Study 2 describes the perceived benefits of combining use of peptides and anabolic steroids.

CASE STUDY 2

PEPTIDES AND POST CYCLE THERAPY

A major side effect of using anabolic steroids in males is the disruption of normal testosterone production, which has typically required individuals to cease using steroids in order to allow the body to recommence the production of testosterone. However, on cessation of steroid use, individuals typically experience a significant loss of the muscle gains that were achieved through the use of steroids.

To maintain their gains, steroid users typically cycle off steroids and commence what is known as a post-cycle therapy (PCT). This is done through the administration of a range of drugs such as Nolvadex, an anti-estrogen drug, and human chorionic gonadotropin (hCG).

Peptides have been identified by bodybuilders as highly effective substances for use in a PCT, thereby allowing individuals to maintain muscular gains while cycling off steroids.

¹⁷ Steroids are typically used in cycles to reduce the side effects associated with the disruption of hormone production due to steroid use. Users of PIEDs also combine multiple substances in order to heighten the effects of steroids and these combinations are known as stacks.

Individuals involved in bodybuilding, particularly well known bodybuilders, are playing a key role in promoting peptides, increasing interest and demand for these substances in the bodybuilding community and by gymnasium users.

ANTI-AGEING CLINIC CLIENTS

Growth hormone-releasing peptides have become increasingly popular as an anti-ageing product given the ability of these substances to naturally stimulate hGH production and address the normally low levels of hGH in older individuals. It is also reported that these peptides are proving to be more effective than hGH as they promote the natural release of hGH as opposed to traditional hGH supplementation therapies. Dehydroepiandrosterone¹⁸ (DHEA) and testosterone have also become increasingly popular as hormonal treatments to 'reverse' the effects of ageing.¹⁹

The use of hGH for anti-ageing purposes is considered by the TGA to be 'off-label', meaning that the drug is used outside the recognised therapeutic uses of the drug.

While hGH and testosterone require a prescription from a medical practitioner, no such requirement currently exists for the supply of growth hormone releasing peptides. Consequently, anti-ageing clinics have become major distributors of peptides around Australia.

Recently, the American Association of Clinical Endocrinologists²⁰ updated their clinical guidelines for the use of hGH in clinical practice following concerns about what the Association called the 'unethical aspects of hGH therapy for athletes and ageing individuals'. These guidelines strongly recommend that under no circumstances should hGH be prescribed unless the patient has a clearly defined medical condition (such as stunted growth), and that hGH should not be administered other than in accordance with the approved uses of hGH.

The anti-ageing industry both overseas and in Australia has expanded significantly in recent years, in line with the increasing range of anti-ageing products being released onto the market.

18 DHEA is a steroid hormone produced in the body. It functions as an endogenous precursor to more potent androgens such as testosterone.

19 Bross, R, Storer, T, Bhasin, S 1999, 'Ageing and Muscle Loss', *Trends in Endocrinology and Metabolism*, vol.10 (5), pp.194-198.

20 Specialising in endocrinology, diabetes, and metabolism, the American Association of Clinical Endocrinologists is a professional community of physicians committed to enhancing the ability of its members to provide high quality patient care.

USE ON ANIMALS

The ACC has identified increasing interest in the administration of peptides to thoroughbred racehorses for the same reasons that these substances are used on humans—injury rehabilitation and to promote recovery. These substances are prohibited for use on racehorses, and although it is suspected that peptides are being administered to racehorses the extent of use across the industry is the subject of ongoing inquiries.

MONITORING FUTURE DEMAND

Available data, including border seizures of PIEDs, national arrests for steroids and drug injecting data, all suggest that the PIEDs market is expanding considerably in Australia.

However, in contrast to the amount of research and knowledge that exists on illicit drug use, formal academic research into the use of PIEDs and the PIEDs market in Australia is extremely limited. This makes it difficult to quantify the size of and identify changes in the PIEDs market.

Further research and consideration of the establishment of key indicators to identify changes in the Australian PIEDs market would assist in addressing this current gap.

Any increase in the use of PIEDs is likely to result in the increased prevalence of injection, as this is the principal route of administration of anabolic steroids and hormones. Increased levels of injection have already been identified in the latest Needle Syringe Program (NSP) Survey, which reported that while relatively small proportions of respondents reported last injecting PIEDs, a significant increase in prevalence occurred over the period 2007 to 2011. Among males who were new to injecting,²¹ more than half (53 per cent) reported last injecting PIEDs.²²

²¹ New to injecting is defined by the NSP study as individuals who have been injecting for less than 3 years.

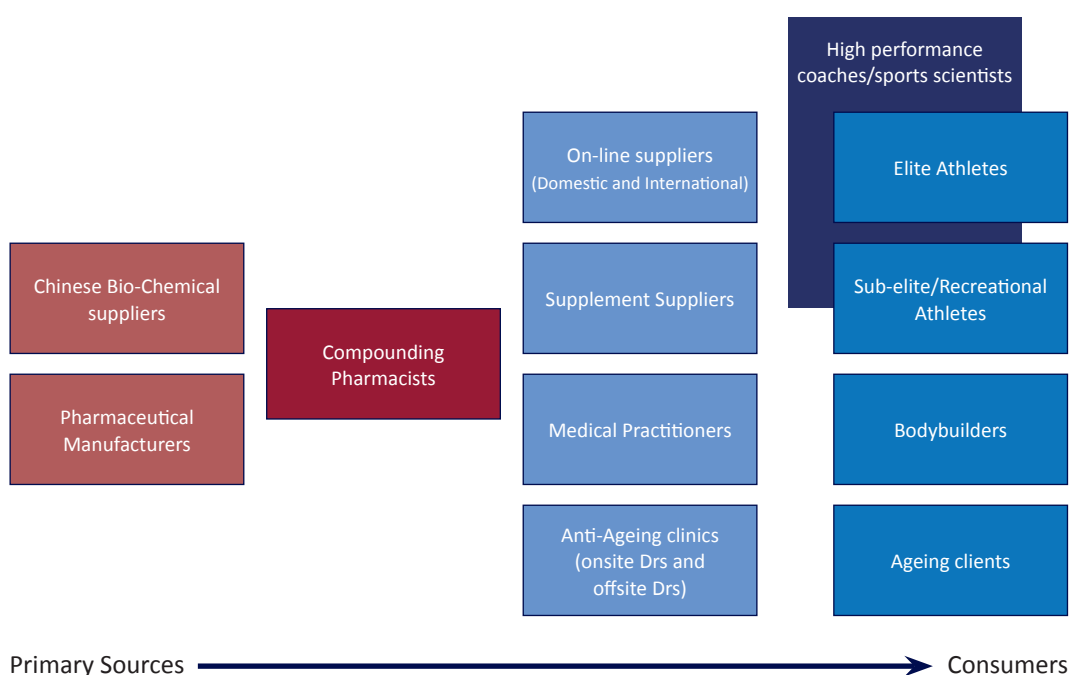
²² University of New South Wales (UNSW) 2012, *Australian NSP Survey: National Data Report 2007–2011*, UNSW, Sydney.

SOURCES OF PEPTIDES AND HORMONES

As illustrated in Figure 2, a highly organised network of individuals and companies are involved in the acquisition and distribution of peptides and hormones. These include:

- on-line suppliers
- anti-ageing clinics
- medical practitioners
- compounding pharmacies
- sports scientists and high performance staff
- sports supplement suppliers.

FIGURE 2: Supply chain from primary suppliers of peptides and hormones through to consumers



ONLINE SUPPLIERS

The supply base to satisfy increasing domestic demand for PIEDs is broad. PIEDs can be easily acquired from a multitude of online stores based in Australia and overseas. Online stores offer a comprehensive range of PIEDs, including anabolic steroids, DHEA, hGH, SARMs, IGF-1 and peptides. However, as is the case with anabolic steroids sold online, the quality is potentially unreliable as the source of the products cannot be verified.

An example of the range of peptides, hormones and other substances available online is provided below (substances which are currently scheduled by the TGA are shown in italics):

- CJC-1295
- *Follistatin 344*
- GHRP-2
- GHRP-6
- Hexarelin
- *HGH Frag 176-191*
- *IGF DES (1-3)*
- *IGF-1 LR3*
- Ipamorelin
- Melanotan II
- *MGF*
- *Modified GRF 1-29*
- *PEG-MGF*
- Thymosin Beta 4 (TB-500).

Products are advertised in a manner to attract a number of user markets, including:

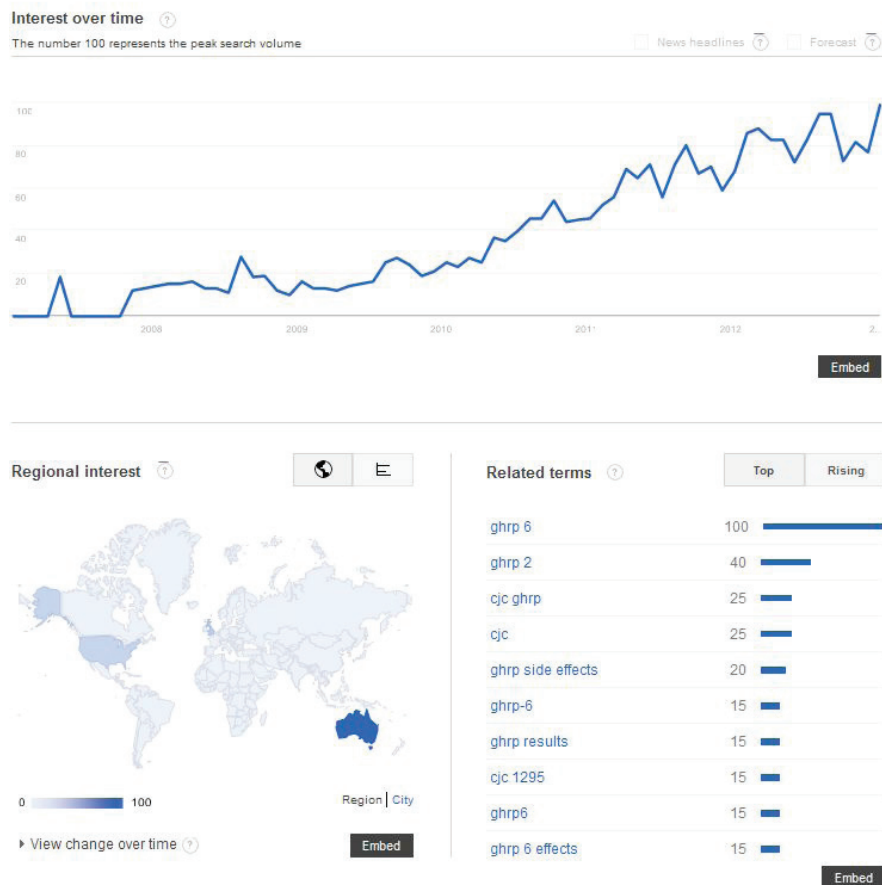
- strength enhancement/muscle enhancement
- anti-ageing
- fat loss
- injury rehabilitation
- libido enhancement
- growth hormone deficiency.

A number of websites selling peptides also offer other prescription only drugs which target the PIED user market, such as aromatase inhibitors. These inhibitors are used in the treatment of breast cancer, but are also used to counter gynecomastia, which is a side effect of anabolic steroid use.

The popularity of online stores as a source for peptides and hormones is reflected in the significant increase in border detections of hormones, which increased 255 per cent between 2009–10 and 2010–2011.

Figure 3 illustrates the number of users and potential users of peptides and hormones using the internet to search for information on these substances. It also illustrates the high level of interest in these substances by Australians.

FIGURE 3: Searches on Google using the term ‘GHRP’ between January 2007 and January 2013 showing volume of searches, countries from which searches emanate and related searches conducted.



Notwithstanding the diverse sources of supply for peptides, the number of permits issued by TGA to allow lawful importation is very low. In particular, data obtained from the TGA indicates that nationally no permits for the importation of CJC-1295 or GHRP-6 were issued in 2012 and that in total only six permits currently exist for the importation of CJC-1295, eleven permits for GHRP-2 and three permits for GHRP-6.

ANTI-AGEING CLINICS

Some anti-ageing clinics have been identified by ASADA, the ACC and other partner agencies as a major source of peptides, hormones and other PIEDs, due to their capacity to supply pharmaceutical quality WADA prohibited PIEDs directly to athletes, in some cases without a prescription.

Anti-ageing clinics are selling a wide range of PIEDs including testosterone, anabolic steroids, hGH, peptides, IGF-1, MGF and SARMs. Some of these clinics have been identified as having links to organised criminal identities.

Athletes and body builders have previously been identified by ASADA as using anti-ageing clinics to acquire testosterone, hGH and anabolic steroids. As many of these substances—such as testosterone and hGH—require a prescription from a medical practitioner, complicit doctors have been identified providing prescriptions to clients of anti-ageing clinics, even if there is no medical reason for the prescribing of these substances and they have had no contact with the patient or access to their medical records.

In many cases, anti-ageing clinics are marketing their services directly to athletes by offering services such as hormone profiling and hormone based training regimes to enhance athletic performance.

The anti-ageing industry both overseas and in Australia has expanded significantly in recent years, in line with the increasing range of anti-ageing products being released onto the market.

MEDICAL PRACTITIONERS

Some medical practitioners have been identified as one of the key conduits through which individuals are obtaining PIEDs, in particular testosterone, hGH, CJC-1295, GHRP-6 and SARMs.

Some medical practitioners who advocate the benefits of peptides and hormones for anti-ageing treatment and/or are working from anti-ageing clinics, appear to be the primary prescribers of the various peptides and hormones used by elite and sub-elite athletes and body builders for their performance and image enhancing effects.

The ACC identified doctors who have dispensed hGH directly to patients without a prescription, which is illegal, or through a pharmacy owned by these doctors. In these instances, no prescription or record of the dispensed hGH was recorded.

The ACC also identified lax and fraudulent prescribing practices by some doctors with links to sporting clubs and anti-ageing clinics. These practices include writing scripts in false names, providing prescriptions without consulting the patient and prescribing hormones without conducting the necessary blood tests normally carried out prior to the prescription of these substances. Some of these doctors are also implicated in experimenting on players, by providing them with different substances in order to determine the effects on their performance.

COMPOUNDING PHARMACIES

The ACC has identified that anti-ageing clinics, supplement suppliers and online stores in Australia are sourcing peptides and hormones through domestic compounding pharmacies.

As opposed to standard pharmacies, which dispense prescription medicines and therapeutic agents, compounding pharmacies provide a range of services in relation to pharmaceuticals such as:

- altering or limiting the dose of a medicine
- changing the physical form of a medicine (for example modifying a pill into a syrup or gel)
- supplying compound drugs that have been discontinued or are no longer available.

Compounding pharmacies are a principal domestic source of peptides and hormones given their capacity to produce medicines and pharmaceutical compounds that are not readily available or commercially produced. Given their ability to manufacture various anti-ageing medicines, compounding pharmacies play a key role in the dispensing of substances prescribed by or distributed through anti-ageing clinics.

Based on available information, compounding pharmacies producing peptides are predominantly sourcing their raw materials from wholesalers based in China.

SPORTS SCIENTISTS AND HIGH PERFORMANCE STAFF

The standard of competition at the elite level of sport has reached a point where winning margins are now measured in hundredths of a second. There is an ever-increasing focus on the science of sport in order to ensure that athletes perform at the highest possible standard and gain any possible competitive advantage. Remaining competitive at the elite level is now dependent on access to the best sports scientists and use of the latest technology.

Information provided to the ACC suggests that in Australian football codes, sports scientists have gained increasing influence over decision making within the clubs. Some of these scientists are playing a critical role in pushing legal and regulatory boundaries in relation to sport supplementation programs and medical treatments given to players.

While it appears that the majority of high performance staff, sports scientists, coaches and medical advisors adhere to anti-doping codes, it is also clear—internationally and domestically—that some of these individuals are playing a critical role in pushing beyond the boundary of what is permitted by WADA. This was particularly evident in the use of PIEDs by Lance Armstrong and his cycling teammates, where particular doctors played a critical role in the development and implementation of the doping program.

CASE STUDY 3

The United States Anti-Doping Agency (USADA) investigation into doping by the American United States Postal Service and Discovery Channel Cycling teams found overwhelming evidence that Dr Michele Ferrari facilitated and orchestrated the sophisticated doping program for these teams.

Dr Ferrari provided technical advice to professional cyclists on the use of PIEDs and blood doping and designed doping programs that riders would follow in order to achieve the largest possible performance enhancement without returning a positive anti-doping result.

Dr Ferrari had a long history of working with an Italian researcher, Franceso Conconi, who, while being funded to develop a test for Erythropoietin (EPO),²³ had also been involved in doping professional cyclists. Ferrari's expert knowledge of EPO and the tests used to detect EPO use by professional cyclists had played a major role in his ability to provide EPO to cyclists and enable the systemic doping to remain undiscovered.

According to the USADA investigation report, Lance Armstrong paid Dr Ferrari just over US\$1 million between 1996 and 2006 for his services.

²³ EPO is a pharmaceutical product which has been widely used by athletes due to its ability to increase the amount of oxygen carried by the blood, resulting in improved endurance.

The ACC has identified specific high-performance staff, sports scientists and coaches within some codes who have condoned and/or orchestrated the administration of prohibited substances, and substances not yet approved for human consumption, to players.

In some cases, peptides and other substances were administered to players without them understanding the nature of the substances, and without the knowledge of the team doctor or club medical staff.

ADMINISTRATION OF UNTESTED SUBSTANCES TO ATHLETES

The ACC has identified a range of substances that have limited to no history of use in humans, are not approved for human use, or their use is considered 'off-label'.

Substances being administered to players include:

- afamelanotide and melanocyte stimulating hormone (Melanotan™ I and II)
- AOD-9604—an anti-obesity drug currently going through human clinic trials
- Cerebrolysin™—a peptide extract from pig brain which is used to treat alzheimer's and stroke victims
- a form of Interleukin not prohibited by WADA—used in the treatment of burns and inflammation associated with trauma (some other forms of Interleukin are prohibited by WADA)
- TA-65™—a drug which acts on a section of the DNA and is purported to reduce ageing at the cellular level
- Actovegin™—calf blood extract (used by a route of administration which is not prohibited by WADA).

While these substances are not prohibited by WADA, due to a lack of long-term clinical studies on the use of these substances or their 'off-label' use, their potential impact on the health of players—both short and long-term—is unknown.

The apparent willingness of some high-performance coaches, trainers and sports scientists to administer WADA-prohibited and experimental drugs and their advocacy of 'off-label' substance use, raises concerns over the welfare of players who are being administered these substances and broader issues for sports administrators in Australia.

It was also identified that some high-performance coaching staff utilised medical staff from outside their respective clubs to administer substances to players. In some cases, the medical staff administering these substances were not communicating with the appointed team doctors nor advising team doctors of the treatments or substances being administered to players. No party appeared to be maintaining comprehensive medical records in relation to treatments being given to players.

SUPPLEMENT SUPPLIERS

Within the Australian sports supplement market, there is an extensive range of products targeted at improving athletic endurance, fat loss, muscle development, hydration and recovery from strenuous training sessions. In many cases, the effectiveness of these products is yet to be clinically proven.

Professional athletes use a wide range of sport supplements to assist with muscle development, fat loss, hydration, recovery and to support immunity during strenuous training periods. In professional sporting teams, supplement programs are developed by

sports scientists, strength and conditioning coaches, team doctors and nutritionists.

While there are a large number of sports supplement companies that sell only legitimate (non-prohibited) sports supplements, a large number of retail and online sports supplement stores also sell substances which are prohibited by WADA, prescription only medicines and prohibited imports.

Some supplement suppliers at the manufacturing, wholesale and retail level are also involved in the sale of prohibited substances. In some cases, professional athletes have inadvertently consumed prohibited substances due to supplements being contaminated at the factory which was processing both WADA-prohibited and non-prohibited supplements. In other cases athletes have inadvertently used prohibited substances due to sports supplements containing undeclared ingredients.

The ACC has identified supplement suppliers as a particular threat to the integrity of sport given their ready access to professional athletes and PIEDs.

ORGANISED CRIME, DRUGS AND SPORT

ORGANISED CRIMINAL LINKS



According to the Director General of WADA, the influence of organised crime on sport is increasing, with criminal groups involved in the trafficking of PIEDs also engaged in money laundering, corruption, match fixing and fraud.²⁴

The international presence of organised criminal groups in the trafficking of PIEDs is further supported by a 2005 assessment²⁵ which found that the PIEDs market is extensive and highly organised,

with the Italian mafia and Russian organised criminal groups just two of the criminal groups heavily involved in trafficking of PIEDs across Europe.

The ACC's Organised Crime in Australia 2011²⁶ report identified the widespread use of PIEDs by persons from a broad cross section of the community and noted that the distribution of PIEDs can be highly profitable.

Through the ACC and ASADA's analysis of the peptide and hormone market, it is assessed that the Australian PIEDs market is larger and more complex than previously assessed.

Organised criminal groups and individuals are involved in the domestic trafficking of PIEDs, with some of these criminal identities and groups also engaged in the trafficking of other illicit drugs.

The ACC considers that organised criminal identities and groups will expand their presence in the Australian peptide and hormone market. This is based on the high demand for peptides and hormones, the highly profitable nature of the market with the mark-up on peptides and hormones reportedly up to 140 per cent, and the established presence of organised criminal identities and groups in the steroid market both as distributors and users of these substances.²⁷

²⁴ Alvad, S 2011, 'WADA's Director General strikes alarm bells against organized crime in sports', *Play the Game*, 23 February, viewed 21 November 2011, <<http://www.playthegame.org/knowledge-bank/articles/wadas-director-general-strikes-alarm-bells-against-organized-crime-in-sports-5113.html>>.

²⁵ Donati, A 2007, *World trafficking in doping substances*, World Anti-Doping Association, viewed 12 November 2011, <http://www.wada-ama.org/Documents/World_Anti-Doping_Program/Governments/WADA_Donati_Report_On_Trafficking_2007.pdf>.

²⁶ Australian Crime Commission (ACC) 2011, *Organised Crime in Australia*, ACC, Canberra.

²⁷ *ibid.*

The presence of organised criminal identities and groups in the PIEDs market presents a threat to the integrity of Australian professional sport as a direct consequence of the increased likelihood of criminal identities and groups interacting with professional athletes and the potential exploitation of these relationships for criminal purposes.

Relationships between athletes and organised crime identities can be exploited by criminals to corrupt the athlete and give a form of social status to the criminal, in the same way that the steroid market has been used by organised crime to corrupt law enforcement officers.

The use of PIEDs by sub-elite athletes has also been identified as an issue of concern by the ACC. Overseas experience has demonstrated that organised criminal groups involved in match fixing are increasingly targeting sub-elite athletes due to the ease with which these individuals can be 'bought', the lower levels of scrutiny from integrity authorities at sub-elite competitions, and the potential long-term value of these athletes to the criminal group. Overseas experience has also demonstrated that criminal identities and groups will invest years developing such relationships, with the ultimate aim of having the athlete participate in activities such as match fixing.

The ACC has identified an increasing number of associations of concern between professional athletes and organised criminal identities in Australia. The ACC's 2011 assessment of *Threats to the Integrity of Professional Sport in Australia*, noted that as the amount of money wagered on sports increases, associations with athletes or other individuals with the ability to influence a sporting contest, or provide inside information, will be increasingly sought after.

The ACC has identified a number of issues that pose a current threat to the integrity of professional sport in Australia. These threats relate to:

- organised criminal infiltration of unregulated markets²⁸
- infiltration through legitimate businesses, contractors and consultants
- illicit drug use and criminal associations
- differing levels of integrity oversight in professional sport in Australia.

²⁸ Unregulated markets are where there is no specific legislation or existing legislation which is open to legal interpretation.

ORGANISED CRIMINAL INFILTRATION OF UNREGULATED MARKETS

In recent years, the ACC has identified that criminal groups and entrepreneurial individuals are increasingly exploiting new and emerging unregulated drug markets.

Entrepreneurial individuals and criminal groups are exploiting these markets by capitalising on the timeframe between when a substance is identified by regulatory authorities as being harmful, and the subsequent regulation of that substance, which in some cases is considerable. This is most clearly demonstrated in the drug analogue market, where manufacturers and vendors continue to release psychoactive substances that are not yet regulated.

These same vulnerabilities are being exploited in relation to peptides and hormones, which in some cases are not yet approved for human use yet are widely available.

Strategies utilised by individuals identified by the ACC as being involved in the distribution of peptides and hormones include:

- the establishment of a 'research' body to obtain peptides and hormones from a compounding pharmacy
- the use of anti-ageing clinics to distribute these substances
- the recruitment of complicit doctors to write prescriptions for controlled pharmaceuticals, such as hGH
- the role of a sports scientist who benefited financially from the sale of peptides and hormones; advocated their use and directed their application at a number of sporting clubs, even though he was not medically qualified.

It is clear that deliberate strategies have been employed by the PIEDs suppliers and distributors to facilitate the acquisition and supply of these substances and circumvent existing regulations around the supply of substances which are not yet approved for human use.

INFILTRATION THROUGH LEGITIMATE BUSINESS

An assessment of money laundering through the football sector in Europe by the Financial Action Taskforce (FATF) found that, unlike other businesses, criminals were attracted to sport for reasons other than profitability.

FATF found that "connections that criminals seek to make through sport are motivated by social prestige and that sport provides a powerful route for criminals to become 'celebrities' by associating with famous people and moving upwards in powerful circles within established society."²⁹ This is particularly relevant in Australia,

²⁹ Financial Action Taskforce, Money Laundering through the football sector, Paris, 2009.

with many professional sporting club boards including some of Australia's business and political leaders.

The ACC has found that sporting clubs, and professional sports in general, are vulnerable to infiltration through sponsorship and business relationships. This is due to the high level of competition for sponsorship dollars between and within the codes, the significant financial pressure many professional sporting clubs are under, and limited or no due diligence conducted on potential investors and business partners. In essence, sporting clubs and codes appear rarely to question the source of money being invested into their clubs.

The ACC has identified individuals with extensive criminal associations as being in business partnerships with major Australian sporting codes. The existence of such business relationships raises concerns over the potential for these relationships to be exploited for criminal purposes and demonstrates how open Australian professional sports currently are to infiltration by organised criminal identities and groups through legitimate businesses.



ILLICIT DRUG USE AND CRIMINAL ASSOCIATIONS

Information obtained by the ACC suggests that illicit drug use by professional athletes remains an ongoing issue, with official statistics for illicit drug use within professional sports likely to significantly understate the extent of actual use. Illicit drug use by athletes leaves them particularly vulnerable to exploitation for other criminal purposes, including match fixing and fraud arising out of the provision of 'inside information'. There is also evidence to suggest that some athletes are supplying others with illicit drugs.

The use of illicit substances by athletes is likely to be correlated in some cases with the use of WADA prohibited substances by those athletes. Some players are allegedly using both PIEDs and illicit drugs, and the risk-taking instincts which are integral to some elite athletes likely explain this decision. There are, however, some athletes who draw distinctions between taking PIEDs and illicit drugs, based on personal opinions and biases and in many cases on an evaluation of the likelihood of the activity being detected.

A number of sports conduct testing on players for illicit drugs and maintain policies to deal with positive illicit drug tests, however evidence suggests that loopholes exist and are being exploited by players seeking to avoid testing and detection.

VULNERABILITIES TO INTEGRITY MECHANISMS

CONTRACTORS AND CONSULTANTS

Sporting codes employ a wide range of individuals who have the capacity to influence the outcome of a game, or have access to inside information which can be used to gain an unfair advantage in betting markets. For example, a mid-tier Australian Football League (AFL) club has 99 staff to support the first grade players. Apart from full-time positions at clubs, individuals with specific skills sets or knowledge, such as sports scientists, are used on a contract basis.

Codes of conduct are used by the sports governing bodies to ensure players conform to relevant rules and expected behaviours. More recently, codes of conduct are being used to prohibit players and other individuals involved with athletes, such as coaches and support staff, from wagering and to reduce the risk of contrived results and the use of inside information in betting markets.

In deciding who is required to adhere to a code of conduct, it is generally recognised that the net should be cast wide to capture all individuals who have access to players and knowledge of team activities. However, the status of contractors and consultants, and if they are captured under a code of conduct, remains unclear to sports governing bodies.

The AFL, which has a progressive integrity management framework, has attempted to address this risk by requiring contractors and consultants to provide their personal details to the sport's integrity unit, as all other club officials and players are required to do.

However, this information is only obtained if the integrity unit becomes aware that an individual is working at a club on a contract basis, or the club provides this information. The ACC has found that if a club neglects to formally disclose this information, it would be highly unlikely that a specific contractor would come to the notice of the sports governing body.

Due to the highly sophisticated nature of doping, specific skills and knowledge are required to ensure athletes obtain the greatest possible benefit without returning a positive anti-doping sample. Overseas experience has illustrated the fundamental role contracted sports scientists and medical professionals play in sophisticated doping programs, as was most clearly demonstrated in the case of Dr Ferrari and his involvement with Lance Armstrong.

As stated previously, sports scientists can play a critical role in taking training programs and the preparation of athletes to the edge of, and sometimes beyond, what is

permitted by WADA. As professional sports become increasingly complex and reliant on sports scientists and other individuals with specialist skill sets, these individuals will pose a threat to the integrity of professional sport in Australia due to:

- the specialist skills of these individuals, in particular medical doctors and individuals with knowledge of PIEDs
- the access to and increasing influence contractors such as sports scientists have on internal mechanisms and decisions related to the training and preparation of professional athletes
- the identified involvement of consultants and contractors in sophisticated doping programs overseas and now Australia
- the limited visibility of these individuals to integrity officers and units.



INCONSISTENT INTEGRITY OVERSIGHT IN PROFESSIONAL SPORT

The extent of integrity measures varies significantly between the sporting codes in Australia, including between codes which form the basis of substantial wagering markets. Integrity management in professional sport in Australia is only as strong as the weakest link across the broader sports industry. The lack of effective integrity management in some sporting codes creates a high level of vulnerability for the broader industry. It is assessed that individuals who pose a threat to the integrity of sport in Australia are capable of targeting those codes with minimal integrity management systems in order to infiltrate the broader industry.

Characteristics of the sports industry which exacerbate this threat are the propensity for sporting codes to recruit from within the broader sporting industry, the high level of interconnectedness within and across professional sports, and the continual movement of individuals within and between sporting codes.

This is particularly the case in the football codes, where players and coaches move to new teams on a regular basis.

The threat of unethical individuals moving between codes is greatest in relation to individuals who have transferrable skills/knowledge, particularly administrators, coaches, high performance coaches and sports scientists.

CONCLUSION

The ACC has found, on the basis of a limited and focused examination of one component of the PIEDs market, that the market has evolved significantly in recent years to include peptides and hormones. These substances, which are WADA-prohibited, are being used by professional athletes in a number of sports in Australia, with widespread use identified or suspected in a number of professional sporting codes. Organised crime has been found to have a tangible and expanding footprint in this market, and their activity is being facilitated by some coaches and support staff of elite athletes, who have orchestrated and/or condoned the use of prohibited substances and/or methods of administration.

The PIEDs market does not rival the established markets for methylamphetamine, cocaine or heroin in terms of the risk and harms they pose to the Australian community, but it does currently, and has the potential to increasingly pose harm to the sector and the broader community out of all proportion to the relative size of the market. This is because of the special status of sport for Australia and Australians, and the enduring significance of concepts such as fairness and integrity in Australian sport. Moreover, unlike the more established illicit drug markets, this particular threat has been identified at a time when it is still possible for a coordinated response to get ‘ahead of the game’, to disrupt the expanding organised crime presence in professional sports and to harden the sports sector to make it less vulnerable to infiltration by organised crime.

There are clear parallels between what has been discovered in Australia and the USADA investigation into Lance Armstrong, which underlines the transnational threat posed by doping to professional sport, both from a ‘fair play’ perspective and as a broader integrity issue.

It is also clear from the findings of this project, the USADA investigation and previous high profile doping cases in Europe and the United States,³⁰ that it is not only athletes who are involved in doping, but athletic support staff, organised criminal groups and complicit doctors.

In the European Union’s most recent White Paper on Sport in 2007,³¹ it was recommended that the fight against doping should not only target athletes, but also those involved in trafficking these substances, as is the case with illicit drugs.

³⁰ BALCO and Operation Puerto.

³¹ European Commission (EC) 2007, *White Paper on Sport*, Brussels, viewed January 29 2013, <http://ec.europa.eu/sport/white-paper/the-2007-white-paper-on-sport_en.htm>.

It is clear that the global trafficking and use of PIEDs is a complex, large and highly profitable market. While some elite athletes, high performance coaches, doctors and sports industry insiders are involved in sophisticated doping programs driven by the need to enhance performance while defeating anti-doping controls, it is also clear that a complex supply and distribution network exists to satisfy the high demand for anabolic steroids, peptides and hormones by sub-elite and recreational athletes, body builders and increasingly, ageing Australians.

The ACC has demonstrated through this project that the threat posed by the PIEDs market and related criminal activities to the integrity of sport in Australia, and organised crime attempts to infiltrate the professional sports sector in this country, exhibits many of the characteristics identified in the USADA investigation of Armstrong's activities in the mid-1990s to mid-2000s. The difference is that the Australian threat is current, crosses sporting codes and is evolving.

APPENDIX ONE - OVERVIEW OF PEPTIDES

Peptides is a generic name given to any group of amino acids that are linked together to form a chain. Essentially, they are similar to proteins, though in much shorter lengths (less than 50 units long). In the world of sport, peptides generally refer to one of two things: either broken protein fragments from hydrolysed proteins; or peptide hormones and related compounds.

Protein peptides are whole proteins that are broken down into smaller peptide fragments by a process of hydrolysis. Hydrolysed proteins are absorbed much faster than other forms of protein and are commonly found in supplements that contain hydrolysed whey protein.

A peptide hormone is a protein which is released in the blood stream. Usually, the peptide hormone is secreted by the pituitary gland. Peptide hormones include growth hormone and insulin. The substances involved in this case stimulate the production of peptide hormones, which is different to substances that mimic the effects of peptide hormones such as somatropin (a synthetic human growth hormone).

The substances identified as being used in Australia are GHRP-2, GHRP-6, CJC-1295, AOD-9604 and hexarelin. An overview summary of these substances is provided below:

GHRP-2 AND GHRP-6

GHRP-2 and GHRP-6 are growth hormone-releasing factors and are therefore prohibited S2 Hormones and Related Substances according to the WADA Prohibited List. They are part of the growth hormone-releasing peptide (GHRP) family, which includes GHRP-1, GHRP-2, GHRP-4, GHRP-6, alexamorelin, ipamorelin and hexarelin. GHRPs are used to stimulate the release of Growth Hormone (GH) by the pituitary gland. They also promote food intake by stimulating hunger and aid in energy metabolism.

Purported benefits of using GHRPs include bone mineral density, increased lean muscle mass, improved strength, rejuvenation and strengthening of joints and improved recovery from injury such as bone fractures. Side effects from the use of GHRP may include hot flushes, loud stomach rumbling, white blood cell count increase, sweating and increased appetite.

GHRP-2 and 6 are administered by subcutaneous injection. GHRP-2 and GHRP-6 are detectable in urine.

CJC 1295

CJC-1295 is considered a growth hormone-releasing factor and is therefore considered to be prohibited according to the WADA Prohibited List in the S2 category (Peptide

hormones, growth factors and related substances). CJC-1295 is a synthetic peptide hormone, similar in structure to GHRH, which stimulates the release of growth hormone, and subsequently IGF-1, from the pituitary gland. CJC-1295 was initially developed to treat those suffering from growth disorders, muscle wasting diseases or burns victims. However, CJC-1295 is not approved for human use.

CJC-1295's purported anabolic effects may increase lean muscle mass, reduce fat and improve performance. In addition, CJC-1295 has anti-inflammatory properties if administered directly to the related area soon after injury, can reduce pain and swelling and also assist in the repair of injured tissue. It is also purported to promote slow wave sleep (SWS) which is responsible for the highest level of muscle growth and memory retention. Further benefits include reduced body fat, increased energy and vitality, increased endurance, accelerated healing, and strengthening of the heart.

CJC-1295 is administered by subcutaneous injection, usually in the abdomen. It is also available as a cream.

AOD 9604

AOD9604 is not currently prohibited under category S2 of the WADA Prohibited List.

AOD9604 works by mimicking the way natural GH regulates the metabolism of fat by stimulating lipolysis (the breakdown or destruction of fat) and inhibits lipogenesis (the transformation of non-fat food materials into body fat). Reports by Caldaza Ltd have shown that AOD9604 had positive (anabolic) effects on cartilage tissue formation as well as enhancements in the 'differential of muscle progenitor cells (cells that create muscle cells) to muscle cells'. Other purported benefits of AOD9604 include increasing muscle mass and IGF-1 levels. AOD-9604 is not approved for human use.

HEXARELIN

Hexarelin is considered a growth hormone releasing factor and is therefore prohibited under category S2, Hormones and Related Substances, according to the WADA Prohibited List. As with GHRP-6, hexarelin stimulates the release of GH, with effects similar to those experienced when using a synthetic growth hormone.

Purported beneficial effects of hexarelin use include increased strength, growth of new muscle fibres and increases in the size of existing muscle fibres, joint rejuvenation and assistance in healing. Hexarelin may also be beneficial in fat reduction. Unlike GHRP-6, there is no effect on appetite as it does not increase ghrelin levels responsible for increased hunger and gastric emptying.

Hexarelin can be administered orally in tablet form or via subcutaneous injection.

APPENDIX TWO - SUMMARY OF LEGAL STATUS AND STATUS IN SPORT OF PEPTIDES AND HORMONES

Substance	Sport Status	Detectable	Scheduling Status (SUSMP)	Border Status
Peptides	GHRP-2 GHRP-6	Prohibited - S2 WADA Prohibited List Yes - Complex	Unscheduled	Schedule 7A Customs (Prohibited Imports) Regulations
	CJC-1295	Prohibited - S2 WADA Prohibited List Yes - Complex	Unscheduled	Schedule 7A Customs (Prohibited Imports) Regulations
	Hexarelin	Prohibited - S2 WADA Prohibited List Yes - Complex	Unscheduled	Schedule 7A Customs (Prohibited Imports) Regulations
	AOD-9604	Not currently prohibited N/A	Unscheduled	Schedule 7A Customs (Prohibited Imports) Regulations
SARMs	Prohibited – S1 WADA Prohibited List	Yes - Complex	To be Schedule 4 in the Poisons Standard – May 2013	Schedule 8 Custom (Prohibited Imports) Regulations
IGF-1	Prohibited - S2 WADA Prohibited List	Yes - Complex	Schedule 4 in the Poisons Standard. Additionally, possession without authority is illegal	Schedule 7A Customs (Prohibited Imports) Regulations
MGF	Prohibited - S2 WADA Prohibited List	Yes - Complex	Schedule 4 in the Poisons Standard. Additionally, possession without authority is illegal	Schedule 7A Customs (Prohibited Imports) Regulations
hGH	Prohibited - S2 WADA Prohibited List	Yes - Complex	Schedule 4 in the Poisons Standard. Additionally, possession without authority is illegal	Schedule 7A Customs (Prohibited Imports) Regulations
Thymosin	Subject to the form used	N/A	Unscheduled	Currently unregulated

APPENDIX THREE – SUMMARY OF PIEDs

Human Growth Releasing Peptides



CJC-1295, GHRP-6, GHRP-2, HEXARELIN, IPAMORELIN, SERMORELIN

Information

Human growth releasing peptides such as CJC-1295 and GHRP-6 stimulate an increased level of human growth hormone (hGH). The main peptides identified as being used through Project Aperio were CJC-1295 and GHRP-6

Method of use:

- Liquid (injected)
- Cream (applied to skin)
- Powder (mixed with saline and injected)

Scheduling Status (SUSMP):

Not approved for human use, currently unscheduled

Border Status:

Schedule 7A Customs (Prohibited Imports) Regulations

World Anti Doping Agency Status:

Prohibited both in and out of competition

Detectable in urine but complex

Growth Hormone Variants



AOD-9604

Information

AOD-9604 (stands for Anti Obesity Drug number 9604) was identified in Project Aperio as being used by professional athletes. AOD-9604 is an experimental drug that is in a growth hormone variants that has fat burning properties and may be used by athletes to increase power to weight ratios by better utilisation of fat stores. Athletes may also use it to rehabilitate soft tissue injuries.

Method of use:

- Liquid (injected)
- Cream (applied to skin)

Scheduling Status (SUSMP):

Not yet approved for human use, about to enter the final phase of clinical human trials

Border Status:

not a border controlled drug

World Anti Doping Agency Status:

not currently prohibited

Insulin Like Growth Factor (IGF-1) and Mechano Growth Factor (MGF)



IGF-1 and MGF

Information

IGF-1 is a hormone secreted by the liver and is one of the primary hormones necessary for cell growth in the body. IGF-1 is used by bodybuilders and athletes due to its anabolic effect.

MGF is derived from IGF-1 and assist tissue repair and adaptation. MGF is used due to its reported ability to facilitate muscle repair following exercise.

Method of use:

- Liquid (injected)

Scheduling Status (SUSMP):

Schedule 4 on the Poisons Schedule – prescription only
Possession without legal authority (a prescription) is illegal.

Border Status:

Schedule 7A Customs (Prohibited Imports) Regulations

World Anti Doping Agency Status:

Prohibited both in and out of competition
Is detectable but complex

Selective Androgen Receptor Modulators (SARMs)

SARMs

Also known as Ostarine, Enobosarm

Information

SARMs are used to treat a range of medical conditions or assist in the management of illnesses such as cancer by reducing muscle wasting. SARMs enhance the body's ability to utilise testosterone.

It is suspected that SARMs are being used by professional athletes due to their anabolic effect.

Method of use:

- Liquid (injected)
- Cream (applied to skin)

Scheduling Status (SUSMP):

To be a Schedule 4 on the Poisons Schedule – prescription only medicine in May 2013

Possession without legal authority (a prescription) is illegal from May 2013

Border Status:

Schedule 8 Customs (Prohibited Imports) Regulations

World Anti Doping Agency Status:

Prohibited both in and out of competition
Some SARMs are currently detectable



ACRONYMS

ACC – Australian Crime Commission

AFL – Australian Football League

ASADA – Australian Sports Anti-Doping Authority

ASC – Australian Sports Commission

Customs and Border Protection – Australian Customs and Border Protection Service

FATF – Financial Action Taskforce

GH – Growth Hormone

GHRP – Growth Hormone Releasing Peptide

hGH – Human Growth Hormone

IGF-1 – Insulin Growth Factor 1

MGF – Mechano Growth Factor

NSP – Needle Syringe Program

PIEDs – Performance and Image Enhancing Drugs

Poisons Standard – Standard for the Uniform Scheduling of Medicines and Poisons

S1 – Schedule 1 (to the WADA Prohibited List)

S2 – Schedule 2 (to the WADA Prohibited List)

S4 – Schedule 4 (to the Standard for the Uniform Scheduling of Medicines and Poisons)

SARMs – Selective Androgen Receptor Modulators

TGA – Therapeutic Goods Administration

USADA – United States Anti-Doping Agency

WADA – World Anti-Doping Agency

